

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A calibration system for a communication system comprising
 - a transmitter circuit;
 - a receiver circuit;
 - a transmission medium having an unpredictable transfer function for transmitting a reference signal and a transmission signal between said transmitter and receiver circuits; and
 - a calibration circuit responsive to an altered reference signal of said transmitter circuit altered by the transmission medium for adjusting the reference signal level of ~~one of both~~ said transmitter and receiver circuits to compensate for variations in the transmission signal due to said transfer function.
2. (Cancelled)
3. (Original) The calibration system of claim 1 in which said transmission medium includes an isolation barrier circuit.
4. (Original) The calibration system of claim 3 in which said transmitter circuit includes a digital to analog circuit having an analog output coupled to said isolation barrier circuit and an input for

receiving an digital input signal to be communicated across said isolation barrier circuit and said receiver circuit includes an analog to digital circuit having an analog input coupled to the isolation barrier circuit for receiving the analog signal communicated across the isolation barrier and providing a digital output signal.

5. (Original) The calibration system of claim 4 in which said digital to analog circuit includes a digital to analog converter with an input for receiving said digital input signal and a modulation circuit responsive to said digital to analog converter for providing said analog output.

6. (Original) The calibration system of claim 4 in which said digital to analog circuit includes an encoder circuit responsive to said digital input signal to provide a digital signal, and a digital to analog converter responsive to said digital signal to provide to said isolation barrier said analog output.

7. (Original) The calibration system of claim 4 in which said calibration circuit adjusts the reference signal level of both said transmitter and receiver circuits.

8. (Original) The calibration system of claim 4 in which said analog to digital circuit includes an analog to digital converter responsive to said analog input from the isolation barrier circuit to provide a digital signal, and a decoder circuit responsive to said digital signal to provide said digital output signal.

9. (Original) The calibration system of claim 4 in which said analog to digital circuit includes a

demodulator circuit responsive to said analog input from the isolation barrier circuit to provide an analog signal and an analog to digital converter responsive to said analog signal to provide said digital output signal.

10. (Withdrawn) The calibration system of claim 1 where the communication system is a bi-directional signal transfer system.

11. (Withdrawn) The calibration system of claim 10 in which said calibration circuit adjusts the reference signal level of both said transmitter and receiver circuits.

12. (Withdrawn) The calibration system of claim 10 in which said said transmission medium includes an isolation barrier circuit.

13. (Withdrawn) The calibration system of claim 12 in which said isolation barrier circuit includes at least one isolation element; said transmission circuit includes a first digital to analog circuit having an analog output coupled to a first side of the isolation barrier circuit and an input for receiving a first digital input signal to be communicated across the isolation barrier and a second digital to analog circuit having an analog output coupled to a second side of the isolation barrier circuit and an input for receiving a second digital input signal to be communicated across the isolation barrier circuit; and the receiver circuit including a first analog to digital circuit coupled to the first side of the isolation barrier circuit for receiving the analog output of the second digital to analog circuit and a second analog to digital circuit coupled to the second side of the isolation barrier circuit for receiving the analog output of the first digital to analog circuit.

14. (Withdrawn) The calibration system of claim 13 in which each of said first and second digital to analog circuits include a digital to analog converter with an input for receiving said digital input signal and a modulation circuit responsive to said digital to analog converter for providing said analog output.

15. (Withdrawn) The calibration system of claim 13 in which each of said first and second digital to analog circuits include an encoder circuit responsive to said digital input signal to provide a digital signal, and a digital to analog converter responsive to said digital signal to provide to said isolation barrier said analog output.

16. (Withdrawn) The calibration system of claim 13 in which each of said first and second analog to digital circuits include an analog to digital converter responsive to said analog input signal from the isolation barrier to provide a digital signal, and a decoder circuit responsive to said digital signal to provide said digital output signal.

17. (Withdrawn) The calibration system of claim 13 in which each of said first and second analog to digital circuits include a demodulator circuit responsive to said analog input signal from the isolation barrier to provide an analog signal and an analog to digital converter responsive to said analog signal to provide said digital output signal.

18. (Withdrawn) The calibration system of claim 13 wherein the communication system is a simultaneous signal transfer system.

19. (Withdrawn) The calibration system of claim 18 further comprising a first echo cancellation circuit, producing a first echo cancellation signal, coupled to the first analog to digital circuit to remove the analog output of the first digital to analog circuit from the input of the first analog to digital circuit, a first echo cancellation calibration circuit responsive to the altered reference signal of the first digital to analog circuit to adjust said first echo cancellation signal, a second echo cancellation circuit, producing a second echo cancellation signal, coupled to the second analog to digital circuit to remove the analog output of the second digital to analog circuit from the input of the second analog to digital circuit, and a second echo cancellation calibration circuit responsive to the altered reference signal of the second digital to analog circuit to adjust said second echo cancellation signal.

20. (Withdrawn) The calibration system of claim 19, wherein said first and second echo cancellation signals are derived from the analog outputs of said first and second digital to analog circuits, respectively.

21. (Withdrawn) The calibration system of claim 19, wherein the first echo cancellation signal is separately generated based on the first digital input signal and the second echo cancellation signal is separately generated based on the second digital input signal.

22. (Withdrawn) The calibration system of claim 21, in which each of said first and second echo cancellation circuits includes a digital to analog circuit with an input connected to said first and second digital input signals, respectively, and a voltage reference circuit, wherein said first and

second echo cancellation calibration circuits adjust the voltage reference circuits based on the digital output signals of said first and second analog to digital circuits, respectively.

23. (Withdrawn) The calibration system of claim 21, in which each of said first and second echo cancellation circuits includes a digital to analog circuit with an input connected to said first and second digital input signals, respectively, and a voltage reference circuit, wherein said first and second echo cancellation calibration circuits adjust the voltage reference circuits based on the altered reference signal of said first and second digital to analog circuits, respectively.

24. (Withdrawn) The calibration system of claim 21 wherein the first echo cancellation circuit includes a digital to analog converter with an input connected to the first digital input signal and an output coupled to the input of the first analog to digital circuit and the second echo cancellation circuit includes a digital to analog converter with an input connected to the second digital input signal and an output coupled to the input of the second analog to digital circuit.

25. (Original) The calibration system of claim 1 including a control circuit coupled to the transmission medium to synchronize the adjustment of the reference signal level.

26. (Original) The calibration system of claim 25 in which the control circuit includes a clock circuit.

27. (Original) The calibration system of claim 26 in which the control circuit includes a control channel.

28. (Cancelled)

29. (Original) The calibration system of claim 28 in which the control circuit includes a clock circuit.

30. (Original) The calibration system of claim 29 in which the control circuit includes a control channel.

31. (Original) The calibration system of claim 4 in which the analog output is a constant average signal.

32. (Original) The calibration system of claim 4 in which the analog input is a constant average signal.

33. (Original) The calibration system of claim 4 wherein said calibration circuit includes a reference signal capture circuit for capturing an altered reference signal and providing said altered reference signal to said receiver circuit, wherein said altered reference signal compensates for variations in the transmission signal due to said transfer function.

34. (Original) The calibration system of claim 33 wherein said calibration circuit includes a reference signal averaging circuit connected to said reference signal capture circuit for averaging said altered reference signal and providing an averaged altered reference signal to said receiver

circuit.

35. (Withdrawn) The calibration system of claim 13 wherein said calibration circuit includes first and second calibration circuits, each of said first and second calibration circuits including a reference signal capture circuit for capturing an altered reference signal and providing said altered reference signals to said first and second receiver circuits respectively, wherein said altered reference signals compensate for variations in the transmission signals due to said transfer function.

36. (Withdrawn) The calibration system of claim 35 wherein each of said first and second calibration circuits include a reference signal averaging circuit connected to said reference signal capture circuit for averaging said altered reference signal and providing an averaged altered reference signal to said first and second receiver circuits, respectively.

37. (Withdrawn) The calibration system of claim 19 including a control circuit coupled to the transmission medium to synchronize the adjustment of the reference signal levels and the echo cancellation signals.

38. (Withdrawn) The calibration system of claim 37 in which the control circuit includes a clock circuit.

39. (Withdrawn) The calibration system of claim 38 in which the control circuit includes a channel control.

40. (Previously Presented) A calibration system for a communication system comprising

- a transmitter circuit;
- a receiver circuit;
- a transmission medium having an unpredictable transfer function for transmitting a transmission signal between said transmitter and receiver circuits; and
- a calibration circuit responsive to an altered reference signal of said transmitter circuit altered by the transmission medium for adjusting the reference signal level of both said transmitter and receiver circuits to compensate for variations in the transmission signal due to said transfer function.

41. (Previously Presented) The calibration system of claim 40 including a control circuit coupled to the transmission medium to synchronize the adjustment of the reference signal levels.

42. (Previously Presented) The calibration system of claim 41 in which the control circuit includes a clock circuit.

43. (Previously Presented) The calibration system of claim 42 in which the control circuit includes a control channel.

44. (New) A calibration system for a communication system comprising

- a transmitter circuit;

a receiver circuit;

a transmission medium having an unpredictable transfer function for transmitting a reference signal and a transmission signal between said transmitter and receiver circuits; and

a calibration circuit responsive to an altered reference signal of said transmitter circuit altered by the transmission medium for adjusting the reference signal level of said transmitter circuit to compensate for variations in the transmission signal due to said transfer function.

45. (New) The calibration system of claim 44 in which said transmission medium includes an isolation barrier circuit.

46. (New) The calibration system of claim 45 in which said transmitter circuit includes a digital to analog circuit having an analog output coupled to said isolation barrier circuit and an input for receiving an digital input signal to be communicated across said isolation barrier circuit and said receiver circuit includes an analog to digital circuit having an analog input coupled to the isolation barrier circuit for receiving the analog signal communicated across the isolation barrier and providing a digital output signal.

47. (New) The calibration system of claim 44 including a control circuit coupled to the transmission medium to synchronize the adjustment of the reference signal level.